Editorial

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The missing technology link?

There are many benefits to living in Santa Barbara on the Central Coastline of California, USA – not least the temperate climate, the mountains and ocean within minutes of each other, and the ubiquitous vineyards within a stone's throw. Unsurprisingly, therefore, Santa Barbara attracts a complete spectrum of humanity, from the uber-wealthy Hollywood set of Montecito, through the typically Californian seekers of alternative healing, to the low-income and "undocumented" Hispanic and Latino workers supporting local agriculture and service industries. Whatever their education and economic background, the one constant technology that local Santa Barbarians possess is a smartphone.

As mentioned elsewhere, silicon is the new black, or at least that is the view of some of the largest technology companies across the planet (Kerr, 2014). Google, Samsung, Microsoft and Apple are almost simultaneously reporting their interest in moving into healthcare by way of marketing wearable sensors. Apparently, these devices will be able to measure all sorts of quantifiable variables, from heart rate, heart rhythm, oxygen saturation and sleep patterns, through to activity and fitness levels. Some of the companies are also making pre-marketing noises about a workable and reliable non-invasive glucose-sensing device (Etherington, 2014). Overall, the expectation is that people will want to wear these devices and will wear them continuously. Well, maybe?

Unfortunately, the experience of the diabetes world has shown that wearable devices are not universally popular. As an example, real-time continuous glucose monitoring (CGM) has a decent evidence base showing that its use is associated with improved glucose control and a reduced risk of severe hypoglycaemia, yet in reality not many people are keen on the devices, even in countries where the costs are covered by insurance. Among young people and children with type 1 diabetes, CGM is used by 4–6% of adolescents and young adults under the age of 26 years (Wong et al, 2014). This may not bode well for uptake of the artificial pancreas whenever that appears as a commercial product and in whatever form – even a fully automated, 24-hour, closed-loop system. Creators of smartphone applications for diabetes have also not fared particularly well. In one survey of more than 1000 apps, these were used by less than 2% of people with diabetes on anything like a regular basis (Jahns, 2014).

So among people with diabetes, their approach to "living with a machine" is very different for current diabetes devices and apps compared to their enthusiasm for owning and using a smartphone, even if this is detrimental to family and social interactions. We need a greater understanding of the "lived experience" to ensure that future technologies are fit to meet the demands of living with diabetes, in addition to glycaemic control. Wearing and interacting with a device may appear a reasonable trade-off for glucose control; however, the practical challenges (e.g. lack of accuracy of CGM and variable results in terms of time in target range) remain problematic. Devices are also a diabetes flag for others to see and a constant reminder of an individual's underlying concern (Barnard et al, 2007).

Device creators, therefore, need to understand and appreciate that human factors will have an impact on the value obtained from investing in new technology for diabetes care. At present there is a shortage of clinical psychologists in the NHS. Just maybe this valuable but rare resource should be channelled towards helping the technology sector rather than towards their traditional role. To be successful, a device must be used and there must be perceived value, otherwise it will become another Sinclair C5!

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